"Empowering Novel Geometric Algebra for Graphics & Engineering Workshop" - Call for Papers

http://fj.ics.keio.ac.jp/cgi17/

Since ACM SIGGRAPH2001 and 2003 conferences, there has been limited attention on the benefits of employing W. K. Clifford's geometric algebras (GA) in solving computer graphics and vision problems. In the meantime, the geometric algebra community focused on GA applications and greatly advanced it as an adequate and viable computing technology. The CGI'16 "Geometric Algebra in Computer Science and Engineering Workshop" began to bridge that gap.

Under the auspices of **CGI'17**, **ENGAGE (Empowering Novel Geometric Algebra for Graphics & Engineering)** (new workshop name 2017) **on Tuesday, 27th June 2017 in Yokohama, Japan**, will again engage in a novel multi-disciplinary approach from mathematics, to computer graphics, computer vision and general computer science fields where GA has strong potential to provide novel answers to existing mathematical problems.

GA is in a particularly well suited position to allow cross-disciplinary solutions in software engineering as it provides an intuitive and insightful common denominator across mathematical disciplines that have often advanced and specialized for specific application purposes; the use and knowledge of GA encourages us to overcome distinct, seemingly incompatible paths by providing a shareable mathematical base again. For example, we expect geometric algebra based contributions to GIS research, data modelling & data structures, adaptive & parallel computing, remote sensing data analysis, UAV target location and other domains.

We invite original contributors in the form of full and short papers, that advance the state-of-the-art of the application of geometric algebra as well as of its computing technology in **topics related, but not limited to:**

➢ Full application of the conformal model to object description, modeling, deformations, registration, manipulation, interaction, tracking, camera system, visibility
➢ Feature Detection & Data Analysis
➢ LIDAR and Point Cloud Algorithms
➢ Data Models, Cross-Disciplinary Data Description, Software Interoperability
➢ Scientific & Information Visualization
➢ Computer graphics rendering
➢ Computer animation and simulation
➢ Augmented and Virtual Reality
➢ Application of Clifford analysis to lighting schemes
➢ Application of Clifford Fourier transforms and Clifford wavelets to 2D and 3D images, including color images
➢ Higher dimensional geometric algebras
➢ GA computing
➢ GA integrations in programming languages
➢ GA hardware implementations
➢ Geographic Information Systems
➢ Other engineering/applied science applications using GA, like robotics applications, graph computing etc.

Accepted **full length** ENGAGE papers will be published in *Mathematical Methods in the Applied Sciences* (MMA), published by John Wiley & Sons, and will be orally presented at the conference. See also the "Author Guidelines" at MMA. Online submission opens Jan. 1st 2017 at https://mc.manuscriptcentral.com/mma. At the time of submission, authors must indicate the Special Issue "Engage (Staples)".

All authors of accepted **short** ENGAGE papers will be invited either to an oral presentation or to a poster presentation. The accepted CGI'17 ENGAGE short papers will be published by the ACM Digital Library within its International Conference Proceedings Series. For author instructions please refer to http://fj.ics.keio.ac.jp/cgi17/ - call-for-papers. When submitting a short paper via EasyChair please choose the track "ENGAGE"!

After the workshop, extended versions of the highest ranked short papers of the workshop proceedings will be invited for publication in *Mathematical Methods in the Applied Sciences* (MMA), published by John Wiley & Sons.

IMPORTANT DATES

Full Papers: (10-15 pages, use attached MMA latex style file **latex_class_files.htm**)

- Abstract submission (ca. 200 words): Feb. 6th 2017 to sstaple@siue.edu
- Paper submission: Feb. 13th 2017
- Paper notification: Mar. 20th 2017
- Camera ready papers due: Apr. 10th 2017

See "Author Guidelines" at MMA. At the time of submission, authors must indicate the Special Issue "Engage (Staples)".

Short Papers: (same as the CGI'17 short papers, between 4-6 pages, ACM DL format **sigconf**)

- Short Paper submission: Apr. 10th 2017
- Short Paper notification: May 8th 2017
- Camera ready papers due: May 22nd 2017

For **further information**, please turn directly to the ENGAGE Workshop organizers:
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